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| APPLICATION NO.                     | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|-------------------------------------|-------------|----------------------|----------------------|------------------|
| 09/839,565                          | 04/20/2001  | William McFarland    | P 0269521 ATH-025(u) | 1458             |
| 27498                               | 7590        | 12/27/2005           | EXAMINER             |                  |
| PILLSBURY WINTHROP SHAW PITTMAN LLP |             |                      | ODOM, CURTIS B       |                  |
| P.O. BOX 10500                      |             |                      | ART UNIT             |                  |
| MCLEAN, VA 22102                    |             |                      | PAPER NUMBER         |                  |
|                                     |             |                      | 2634                 |                  |

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                                    |  |
|------------------------------|-------------------------------|------------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>09/839,565 | Applicant(s)<br>MCFARLAND, WILLIAM |  |
|                              | Examiner<br>Curtis B. Odom    | Art Unit<br>2634                   |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 2-5, 8, 9, 12, 13, 15-18, 20, 21, 24, 25 and 80-82 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☒ Claim(s) 2-5, 15-18 and 80-82 is/are allowed.  
 6) ☒ Claim(s) 8, 9, 12, 13, 20, 21, 24 and 25 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 20 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 8, 12, 20, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (previously cited in Office Action 6/14/2005) in view of Uesugi (previously cited in Office Action 6/14/2005).

Regarding claim 8, van Nee discloses a method of communicating between a transmitter and a receiver in a wireless multicarrier system comprising the steps of:

setting (column 4, line 31-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter an initial number of carriers and an initial symbol rate at which symbols are transmitted from the transmitter to the receiver;

transmitting (Fig. 1, block 24, column 6, lines 35-40) a first group of symbols using the initial number of carriers and the initial symbol rate;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the number of carriers in active use from the initial number of carriers to a subsequent number of carriers that is different than the initial number of carriers (column 7, line

62-column 8, line 19 and column 9, line 42-column 10, line 33), wherein the number of carriers are changed based upon feedback from the mobile station; and

transmitting (Fig. 1, block 24) a second group of symbols using the subsequent number of carriers.

Van Nee does not disclose the step of changing in the transmitter the number of carriers in active use includes the step of informing the transmitter of those carriers that were used in the initial number of carriers and will not be used in the subsequent number of carriers by placing zero magnitude signals on those carriers within the transmitter.

However, Uesugi discloses reducing a number of carriers needed for transmission by not placing data on carriers which are not needed for transmission (column 5, lines 5-58 and column 7, line 13-column 8, line 8). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of van Nee with the teachings of Uesugi since Uesugi states that not having to process these carriers for transmission of data allows for power consumption within the device (column 8, lines 1-8).

setting (column 4, line 31-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter an initial number of carriers and an initial symbol rate at which symbols are transmitted from the transmitter to the receiver;

transmitting (Fig. 1, block 24, column 6, lines 35-40) a first group of symbols using the initial number of carriers and the initial symbol rate;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the number of carriers in active use from the initial number of carriers to a subsequent number of carriers that is different than the initial number of carriers (column 7, line

62-column 8, line 19 and column 9, line 42-column 10, line 33), wherein the number of carriers are changed based upon feedback from the mobile station; and

transmitting (Fig. 1, block 24) a second group of symbols using the subsequent number of carriers;

wherein the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter column 5, line 5-column 6, line 33).

Van Nee does not disclose the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter by a factor that is a power of two or the step of changing in the transmitter the number of carriers in active use includes the step of informing the transmitter of those carriers that were used in the initial number of carriers and will not be used in the subsequent number of carriers by placing zero magnitude signals on those carriers within the transmitter.

However, Uesugi discloses the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter by a factor that is a power of two (column 5, lines 5-10 and column 6, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of van Nee with the teachings of Uesugi since Uesugi states that changing the iFFT size by a power of two reduces the total number of operations of the iFFT thereby reducing power consumption (column 5, lines 5-10). Uesugi also discloses reducing a number of carriers needed for transmission by not placing data on carriers which are not needed for transmission (column 5, lines 5-58 and column 7, line 13-column 8, line 8). Therefore, it would have been

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obvious to one skilled in the art at the time the invention was made to modify the device of van Nee with the teachings of Uesugi since Uesugi states that not having to process these carriers for transmission of data allows for power consumption within the device (column 8, lines 1-8).

Regarding claim 20, van Nee discloses a method of communicating between a transmitter and a receiver in a wireless multicarrier system comprising the steps of:

setting (column 4, line 31-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter an initial number of carriers and an initial symbol rate at which symbols are transmitted from the transmitter to the receiver;

transmitting (Fig. 1, block 24, column 6, lines 35-40) a first group of symbols using the initial number of carriers and the initial symbol rate;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the rate at which symbols are transmitted from the transmitter to the receiver from the initial symbol rate to a subsequent symbol rate that is different than the initial symbol rate (column 7, line 62-column 8, line 19), wherein the symbol (data) rate is increased or decreased based on feedback from the receiver;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the number of carriers in active use from the initial number of carriers to a subsequent number of carriers that is different than the initial number of carriers (column 7, line 62-column 8, line 19 and column 9, line 42-column 10, line 33), wherein the number of carriers are changed based upon feedback from the mobile station; and

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transmitting (Fig. 1, block 24, column 10, lines 17-33) a second group of symbols using the subsequent number of carriers and the subsequent symbol rate, wherein both the symbol and number of carriers can be dynamically scaled (changed) for a subsequent transmission.

Van Nee does not disclose the step of changing in the transmitter the number of carriers in active use includes the step of informing the transmitter of those carriers that were used in the initial number of carriers and will not be used in the subsequent number of carriers by placing zero magnitude signals on those carriers within the transmitter.

However, Uesugi discloses reducing a number of carriers needed for transmission by not placing data on carriers which are not needed for transmission (column 5, lines 5-58 and column 7, line 13-column 8, line 8). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of van Nee with the teachings of Uesugi since Uesugi states that not having to process these carriers for transmission of data allows for power consumption within the device (column 8, lines 1-8).

Regarding claim 24, van Nee discloses a method of communicating between a transmitter and a receiver in a wireless multicarrier system comprising the steps of:

setting (column 4, line 31-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter an initial number of carriers and an initial symbol rate at which symbols are transmitted from the transmitter to the receiver;

transmitting (Fig. 1, block 24, column 6, lines 35-40) a first group of symbols using the initial number of carriers and the initial symbol rate;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the rate at which symbols are transmitted from the transmitter to the receiver from the initial symbol rate to a subsequent symbol rate that is different than the initial symbol rate (column 7, line 62-column 8, line 19), wherein the symbol (data) rate is increased or decreased based on feedback from the receiver;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the number of carriers in active use from the initial number of carriers to a subsequent number of carriers that is different than the initial number of carriers (column 7, line 62-column 8, line 19 and column 9, line 42-column 10, line 33), wherein the number of carriers are changed based upon feedback from the mobile station; and

transmitting (Fig. 1, block 24, column 10, lines 17-33) a second group of symbols using the subsequent number of carriers and the subsequent symbol rate, wherein both the symbol and number of carriers can be dynamically scaled (changed) for a subsequent transmission;

wherein the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter column 5, line 5-column 6, line 33).

Van Nee does not disclose the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter by a factor that is a power of two or the step of changing in the transmitter the number of carriers in active use includes the step of informing the transmitter of those carriers that were used in the initial number of carriers and will not be used in the subsequent number of carriers by placing zero magnitude signals on those carriers within the transmitter.



However, Uesugi discloses the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter by a factor that is a power of two (column 5, lines 5-10 and column 6, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of van Nee with the teachings of Uesugi since Uesugi states that changing the iFFT size by a power of two reduces the total number of operations of the iFFT thereby reducing power consumption (column 5, lines 5-10). Uesugi also discloses reducing a number of carriers needed for transmission by not placing data on carriers which are not needed for transmission (column 5, lines 5-58 and column 7, line 13-column 8, line 8). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of van Nee with the teachings of Uesugi since Uesugi states that not having to process these carriers for transmission of data allows for power consumption within the device (column 8, lines 1-8).

3. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (previously cited in Office Action 6/14/2005) in view of Levin (U. S. Patent No. 6, 452, 907).

Regarding claim 8, van Nee discloses a method of communicating between a transmitter and a receiver in a wireless multicarrier system comprising the steps of:

setting (column 4, line 31-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter an initial number of carriers and an initial symbol rate at which symbols are transmitted from the transmitter to the receiver;

transmitting (Fig. 1, block 24, column 6, lines 35-40) a first group of symbols using the initial number of carriers and the initial symbol rate;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the number of carriers in active use from the initial number of carriers to a subsequent number of carriers that is different than the initial number of carriers (column 7, line 62-column 8, line 19 and column 9, line 42-column 10, line 33), wherein the number of carriers are changed based upon feedback from the mobile station; and

transmitting (Fig. 1, block 24) a second group of symbols using the subsequent number of carriers.

Van Nee does not disclose the step of changing in the transmitter the number of carriers in active use includes the step of informing the transmitter of those carriers that were not used in the initial number of carriers and will be used in the subsequent number of carriers by placing data conveying signals on those carriers that previously had zero magnitude signals within the transmitter.

Levin discloses changing in the transmitter (column 4, line 6-column 5, line 34) the number of carriers in active use includes placing data conveying signals (bits) on those carriers that previously had zero magnitude signals (unused carriers/bins) within the transmitter. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of van Nee with the teachings of Levin since Levin states that this feature allows for dynamic rate adaptation which can minimize overall system power (column 5, lines 12-34).

Regarding claim 21, van Nee discloses a method of communicating between a transmitter and a receiver in a wireless multicarrier system comprising the steps of:

setting (column 4, line 31-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter an initial number of carriers and an initial symbol rate at which symbols are transmitted from the transmitter to the receiver;

transmitting (Fig. 1, block 24, column 6, lines 35-40) a first group of symbols using the initial number of carriers and the initial symbol rate;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the rate at which symbols are transmitted from the transmitter to the receiver from the initial symbol rate to a subsequent symbol rate that is different than the initial symbol rate (column 7, line 62-column 8, line 19), wherein the symbol (data) rate is increased or decreased based on feedback from the receiver;

changing (column 4, line 1-column 5, line 5 and column 5, line 58-column 6, line 40) in the transmitter the number of carriers in active use from the initial number of carriers to a subsequent number of carriers that is different than the initial number of carriers (column 7, line 62-column 8, line 19 and column 9, line 42-column 10, line 33), wherein the number of carriers are changed based upon feedback from the mobile station; and

transmitting (Fig. 1, block 24, column 10, lines 17-33) a second group of symbols using the subsequent number of carriers and the subsequent symbol rate, wherein both the symbol and number of carriers can be dynamically scaled (changed) for a subsequent transmission.

Van Nee does not disclose the step of changing in the transmitter the number of carriers in active use includes the step of informing the transmitter of those carriers that were not used in the initial number of carriers and will be used in the subsequent number of carriers by placing

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data conveying signals on those carriers that previously had zero magnitude signals within the transmitter.

Levin discloses changing in the transmitter (column 4, line 6-column 5, line 34) the number of carriers in active use includes placing data conveying signals (bits) on those carriers that previously had zero magnitude signals (unused carriers/bins) within the transmitter.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the device of van Nee with the teachings of Levin since Levin states that this feature allows for dynamic rate adaptation which can minimize overall system power (column 5, lines 12-34).

4. Claims 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Nee (previously cited in Office Action 6/14/2005) in view of Levin (U. S. Patent No. 6, 452, 907) and in further view of Uesugi (previously cited in Office Action 6/14/2005).

Regarding claims 13 and 25, van Nee and Levin disclose all the limitations of claims 13 and 25 (see rejection of claims 9 and 91) including the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter (van Nee, column 5, line 5-column 6, line 33), but van Nee and Levin do not disclose the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter by a factor that is a power of two.

Uesugi discloses the step of changing in the transmitter the number of carriers in active use includes the step of changing an iFFT size of an iFFT in the transmitter by a factor that is a power of two (column 5, lines 5-10 and column 6, lines 17-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of van Nee and Levin with the teachings of Uesugi since Uesugi states that changing the iFFT size by a power of two reduces the total number of operations of the iFFT thereby reducing power consumption (column 5, lines 5-10).

### *Allowable Subject Matter*

5. Claims 2-5 and 15-18 are allowable over prior art references because related references do not disclose changing the symbol rate and number of carriers by controlling a frequency synthesizer used to clock a divide by N counter, IFFT, and parallel to serial converter. Claims 80-82 are allowable over prior art references because related references do not disclose changing the symbol rate and number of carriers by transmitting a header including the desired symbol rate and number of carriers.

### *Conclusion*


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom  
December 21, 2005



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